CLAIMS

1. A multiple path information transfer method in a cellular radio network, including the steps of

receiving, at several receivers, radio signals representing digital information from at least one signal source;

extracting, from each received radio signal, a corresponding digitized baseband signal that at least partially contains soft information;

compressing at least parts of the soft information of said extracted baseband signals to form compressed baseband signals;

forwarding said compressed baseband signals to a combining unit over a transport network;

de-compressing said forwarded signals to at least approximately restore said baseband signals; and

using said de-compressed signals to at least approximately restore said digital information.

- 2. The method of claim 1, including the step of performing noise suppression on at least parts of said extracted baseband signals before compression.
- 3. The method of claim 2, wherein said noise suppression is performed by a posteriori probability filtering.
- 4. The method of claim 3, wherein said noise suppression is performed by maximum a posteriori filtering.
- 5. The method of claim 3, wherein said noise suppression is performed by log maximum a posteriori filtering.
- 6. The method of any of claims 2-5, wherein said noise suppression is performed during soft output demodulation.

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- 7. The method of any of claims 2-5, wherein said noise suppression is performed on the output signal from a soft output demodulator.
- 8. The method of claim 1, wherein said compressing step includes vector quantization of at least parts of the soft information.
- 9. The method of claim 1, wherein the compression in said compressing step is lossy.
- 10. The method of claim 1, including the step of selecting compression mode for said soft information at least partially based on at least one feedback signal from said combining unit.
- 11. The method of claim 1, including the step of selecting compression mode for said soft information at least partially based on channel estimates.
- 12. A multiple path information transfer system in a cellular radio network, said system including

several receivers (BS-1, ..., BS-N) for receiving radio signals representing digital information from at least one signal source;

means for extracting, from each received radio signal, a corresponding digitized baseband signal that at least partially contains soft information;

means (10; 10A, 10B) for compressing at least parts of the soft information of said extracted baseband signals to produce compressed baseband signals;

means (12, 14) for forwarding said compressed baseband signals to a combining unit over a transport network;

means (16; 16A, 16B) for de-compressing said forwarded signals to at least approximately restore said baseband signals; and

means (18-24) using said de-compressed signals to at least approximately restore said digital information.

- 13. The system of claim 12, including a noise suppressor (28, 30) performing noise suppression on at least parts of said extracted baseband signals before compression.
- 14. The system of claim 13, wherein said noise suppression is performed by a posteriori probability filters (28; 30).
- 15. The system of claim 14, wherein said noise suppression is performed by maximum a posteriori filters (28; 30).
- 16. The system of claim 14, wherein said noise suppression is performed by log maximum a posteriori filters (28; 30).
- 17. The system of any of claims 13-16, wherein said noise suppression is performed by soft output demodulators (28).
- 18. The system of any of claims 13-16, wherein said noise suppression is performed by filters (30) filtering output signals from soft output demodulators.
- 19. The system of claim 12, including means for vector quantization of at least parts of the soft information.
- 20. The system of claim 12, wherein said means for compressing is adapted to perform lossy compression.
- 21. The system of claim 12, including means for selecting compression mode for said soft information at least partially based on at least one feedback signal from said combining unit.
- 22. The system of claim 12, including means for selecting compression mode for said soft information at least partially based on channel estimates.

- 23. A base station in a digital radio network, said base station including
- a receiver for receiving a radio signal representing digital information from at least one signal source;

means for extracting a digitized baseband signal, which at least partially contains soft information, from said received radio signal; and

means (10; 10A, 10B) for compressing at least parts of the soft information of said extracted baseband signal into a de-compressible form to form a compressed baseband signal.

- 24. The base station of claim 23, including a noise suppressor (28, 30) performing noise suppression on at least parts of said extracted baseband signal before compression.
- 25. The base station of claim 24, wherein said noise suppression is performed by an a posteriori probability filter (28; 30).
- 26. The base station of claim 25, wherein said noise suppression is performed by a maximum a posteriori filter (28; 30).
- 27. The base station of claim 25, wherein said noise suppression is performed by a log maximum a posteriori filter (28; 30).
- 28. The base station of any of claims 24-27, wherein said noise suppression is performed by a soft output demodulator (28).
- 29. The system of any of claims 24-27, wherein said noise suppression is performed by a filter (30) filtering output signals from a soft output demodulator (28).
- 30. The base station of claim 23, including means (10; 10A, 10B) for vector quantization of at least parts of the soft information.

- 31. The base station of claim 23, wherein said means for compressing is adapted to perform lossy compression.
- 32. The base station of claim 23, including means for selecting compression mode for said soft information at least partially based on at least one feedback signal from an external unit.
- 33. The base station of claim 23, including means for selecting compression mode for said soft information at least partially based on channel estimates.
- 34. A signal combining unit in a cellular radio network, said combining unit including
- means (14) for receiving multiple signals from a transport network, each signal at least partially containing compressed soft information;
- means (16; 16A, 16B) for de-compressing said soft information to form corresponding de-compressed baseband signals from said received signals, and
- means (18-24) for combining said baseband signals based on said decompressed soft information.
- 35. The signal combining unit of claim 34, including at least one lookup table for de-compressing vector quantized soft information.
- 36. The signal combining unit of claim 34, including means for sending at least one control signal to compression units to assist in selecting compression mode for said soft information.
- 37. A signal decoder node in a cellular radio network, said decoder including means (14) for receiving a signal from a transport network, said signal at least partially containing compressed soft information;
- means (16; 16A, 16B) for de-compressing said soft information to form a corresponding de-compressed baseband signal from said received signal, and

means (24) for decoding said de-compressed baseband signal based on said de-compressed soft information.

- 38. The signal decoder of claim 36, including at least one lookup table for decompressing vector quantized soft information.
- 39. The signal decoder of claim 37, including means for sending at least one control signal to a compression unit to assist in selecting compression mode for said soft information.
